

**Notice of Allowability**

**Application No.**

09/961,281

**Examiner**

Rosemary E. Ashton

**Applicant(s)**

AOAI ET AL.

**Art Unit**

1752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the paper filed 24 June 2004.
2. ☒ The allowed claim(s) is/are 1-20.
3. ☐ The drawings filed on \_\_\_\_\_ are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's 'Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_



ROSEMARY ASHTON  
PRIMARY EXAMINER

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***Abstract***

1. The abstract of the disclosure is objected to because it is too long and contains the words [object] and [construction]. There are two periods after "resistance". Correction is required. See MPEP § 608.01(b).

2. Applicant's submission of a certified translation of foreign priority document JP 2000-292537 overcomes the rejection over Hatakeyama.

3. With respect to applicant's request for proof of the use of "official notice" by the examiner stating surfactants are well known in the art and one of ordinary skill would know how to use them in a resist composition the examiner supplies the following art and the sections needed for support.

**Patent No.      Inventor                      section**

5,693,452      Aoai et al.      Teaches a positive photoresist that states in col. 51:

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A surfactant may be added into the resist composition of the present invention for further improvement in the cost-ability such as striation.

Examples of the surfactant include a nonionic surfactant such as polyoxyethylene alkyl ethers (e.g., polyoxyethylene lauryl ether, polyoxyethylenestearyl ether, polyoxyethylene octyl ether and polyoxyethylene oleyl ether), polyoxyethylene alkylaryl ethers (e.g., polyoxyethylene octyl phenol ether and polyoxyethylene nonyl phenol ether), polyoxyethylene-polyoxypropylene block copolymers, sorbitan fatty acid esters (e.g., sorbitan monolaurate, sorbitan monopalmitate, sorbitan monostearate, sorbitan monooleate, sorbitan trioleate and sorbitan tristearate), and polyoxyethylene sorbitan fatty acid esters (e.g., polyoxyethylene sorbitan monolaurate, polyoxyethylene sorbitan monopalmitate, polyoxyethylene sorbitan monostearate, polyoxyethylene sorbitan trioleate and polyoxyethylene sorbitan tristearate); a fluorine-based surfactant such as Eftop EF301, EF303 and EF352 (produced by Shin Akita Kasei KK), Megafac F171 and F173 (produced by Dai-Nippon Ink & Chemicals, Inc.), Florade FC403 and FC431 (produced by Sumitomo 3M KK), ASAHIGUARD AG710, SURFLON S-382, SC101, SC102, SC103, SC104, SC105 and SC106 (produced by Asahi Glass KK); organosiloxane polymer KP341 (produced by Shin-Etsu Chemical KK); and acrylic or methacrylic (co)polymer POLYFLO No. 75 and No. 95 (produced by Kyoel Sha Yushi Kagaku Kogyo KK). Among them, a fluorine-based surfactant and a silicon-based surfactant are particularly preferred. The surfactant is added in an amount of usually 2 parts by weight or less, preferably 1 part by weight or less, per 100 parts by weight of the solid content in the composition of the present invention.

These surfactants may be added individually or in combination of several kinds thereof.

6,087,064 Lin et al. Teaches a negative photoresist that states in col. 12:

The photoresist compositions may further include an organic base additives, surfactants, sensitizers or other expedients known in the art. The compositions of the invention are not limited to any specific selection of these expedients.

Examples of base additives include: dimethylamino pyridine, 7-diethylamino-4-methyl coumarin ("Coumarin 1"), tertiary amines, proton sponge, berberine, and the polymeric amines as in the PLURONIC or TETRONIC series from BASF. Tetra alkyl ammonium hydroxides or cetyltrimethyl ammonium hydroxide may be used as a base additive when the PAG is an onium salt.

Examples of possible surfactants include fluorine-containing surfactants such as FLUORAD FC-430 available from 3M Company in St. Paul, Minn., and siloxane-containing surfactants such as the SILWET series available from Union Carbide Corporation in Danbury, Conn.

6,100,004 Elsaesser et al. Teaches a positive or negative photoresist that states in col. 4:

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In addition to the above-mentioned components, the radiation-sensitive mixture may contain other additives commonly used in recording materials for making printing plates. These additives include, for example, indicator dyes (e.g., dialkylaminobenzenes), photochemical acid formers (e.g., trifluoromethane sulfonates or hexafluoro-phosphates of diazodiphenylamines), surfactants (preferably fluorine-containing surfactants or silicone-based surfactants), poly (alkylene oxides) for controlling the acidity of the acidic units, and low-molecular weight compounds having acidic units for increasing the processing speed.

6,265,135 Kodama et al. Teaches a positive photoresist that states in the abstract and col. 40:

A positive-working electron beam or X-ray resist composition comprising:

- (a) a compound capable of generating an acid by irradiation of an electron beam or X-ray;
- (b) a resin containing a group which is decomposable by action of an acid to increase solubility in an alkali developing solution or (c) a resin insoluble in water and soluble in the alkali developing solution; and
- (c) a fluorine and/or silicon surfactant,

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[IV] Fluorine and/or Silicon Surfactant (Component (c))

The fluorine type and/or silicon type surfactant (c) contained in each positive-working electron beam or X-ray resin composition of the present invention will be explained next.

Each photosensitive resin composition of the present invention can contain either a fluorine type surfactant or a silicon type surfactant, or both of them.

Examples of such surfactants (c) include the surfactants described in U.S. Pat. Nos 5,405,720, 5,360,692, 5,529,881, 5,296,330, 5,436,098, 5,576,143, 5,294,511, and 5,824,451, JP-A-62-36663, JP-A-61-226746, JP-A-61-226745, JP-A-62-170950, JP-A-63-34540, JP-A-7-230165, JP-A-8-62834, JP-A-9-54432, and JP-A-9-5988. It is also possible to use the following commercial surfactants as they are.

Examples of usable commercial surfactants include fluorine type and/or silicon type surfactants such as F-Top EF301 and EF303 (manufactured by New Akita Chemical Company), Flored FC430 and FC431 (manufactured by Sumitomo 3M Ltd.), Megafac F171, F173, F176, F189, and R08 (manufactured by Dainippon Ink & Chemicals, Inc.), and Surfion S-382, SC-101, SC-102, SC-103, SC-104, SC-105, and SC-106 (manufactured by Asahi Glass Co., Ltd.). Polysiloxane polymer KP-341 (manufactured by Shin-Etsu Chemical Co., Ltd.) and Troysol S-366 (Troy Chemical Co.) are also usable as a silicon type surfactant.

The incorporation amount of the surfactant (c) is generally from 0.00001 to 2 parts by weight, preferably from 0.0001 to 1 part by weight, per 100 parts by weight of the composition of the invention on a solid basis. Those surfactants can be used alone or in combination of two or more thereof.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rosemary E. Ashton whose telephone number is 571-272-1326. The examiner works a 6 hr. daily work schedule and can normally be reached M-F between 10:00 am and 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached at 571-272-1526.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC)  
at 866-217-9197 (toll-free).

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September 19, 2004



Rosemary E. Ashton  
Primary Examiner  
Art Unit 1752

**ROSEMARY ASHTON**  
**PRIMARY EXAMINER**